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EXAMINER				
KAO, CHIH CHENG G				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/510,887

Applicant(s)

SUZUKI ET AL.

Examiner

Chih-Cheng Glen Kao

Art Unit

2882

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-6, 8-11, 14-17, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 7, 12, 13 and 18-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 May 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 10, 2008, has been entered.

Drawings

2. The drawings are objected for minor informalities. In the following format (location of objection; suggestion for correction), the following correction(s) may obviate the objection(s): (fig. 1, at reference numeral #54; fixing the label to read as "headrest motor", since the last "r" appears to be cutoff), (fig. 14, at reference numeral #54; fixing the label to read as "headrest motor", since the last "r" appears to be cutoff), and (fig. 15, at reference numeral #55; fixing the label to read as "headrest motor", since the last "r" appears to be cutoff).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure

must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 3-23 are objected to because of the following informalities, which appear to be minor draft errors including grammatical and/or lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following correction(s) may obviate the objection(s): (claim 11, line 3; inserting --a-- before "conical"), (claim 14, line 3; inserting --or a-- before "photo diode array"), (claim 23, lines 14-15, "said X-ray rotary radiation means"; deleting "rotary"), (claim 23, lines 15-16, "said X-ray rotary radiation means"; deleting "rotary"), and (claim 23, line 17, "said X-ray rotary"; deleting replacing "rotary" with --radiation means--).

Claims 3-22 are objected to by virtue of their dependency. For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 4-6, 10, 11, 14-17, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Arai et al. (US 6118842).

5. Regarding claim 23, Arai et al. discloses an X-ray computer tomography apparatus (abstract, lines 1-3) having an X-ray radiation means comprising an X-ray generator (fig. 2, #28) and a two-dimensional X-ray image sensor (fig. 2, #38), wherein an X-ray beam (fig. 2, from #28) is radiated on an object (fig. 2, object at #163) to be examined for X-ray circulation radiation (fig. 2, via #22), while said X-ray generator and said X-ray image sensor move around said object (fig. 2, object at #163) with said object interposed therebetween, so as to keep their mutual facing positional relation (fig. 2), and wherein a first X-ray tomography is executed for obtaining a panoramic image (abstract, “panoramic”) and a second X-ray tomography is executed for obtaining a computed tomography image of an interested area of said object (abstract, “CT”), said X-ray computer tomography apparatus comprising: an object holding means (fig. 1, #12), an object moving means (fig. 2, #10) on which said object is set up, and a processing means (fig. 7).

Note that recitations (i.e., for controlling said object moving means to move said object holding means depending on the changing of rotary angle of said X-ray radiation means, for

executing said first X-ray tomography, while said X-ray radiation means rotates around said object during execution of said X-ray tomography, with a center of said X-ray radiation means being fixed relative to said apparatus) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. Therefore, these recitations have not been given patentable weight. See MPEP 2114.

6. Regarding claim 4, note that recitations (i.e., wherein said first X-ray tomography is executed for obtaining an X-ray sectional image including a blurred image of regions other than a target sectional area through a curved plane tomography or a flat plane tomography in a manner such that said X-ray generator and said two-dimensional X-ray image sensor are moved around an object to be examined, with said object interposed therebetween, so as to hold their mutual facing positional relation, and wherein said second X-ray tomography is executed for obtaining an X-ray sectional image excluding a blurred image through computed tomography which computes and processes three-dimensional X-ray absorption coefficient data) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. Therefore, these recitations have not been given patentable weight. See MPEP 2114.

7. Regarding claim 5, Arai et al. further discloses wherein movement of said X-ray generator and said two-dimensional X-ray image sensor is a rotary movement (fig. 2, via #22) or a parallel movement.

8. Regarding claim 6, note that recitations (i.e., wherein said second X-ray tomography is executed for obtaining an X-ray computed tomography image around a local region of said object in a manner such that the interested area of said object conforms to the rotary center of X-ray circulating radiation by moving said object holding means or said X-ray radiation means after said first X-ray tomography is finished) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. Therefore, these recitations have not been given patentable weight. See MPEP 2114.

9. Regarding claim 10, note that recitations (i.e., wherein said first X-ray tomography is executed for obtaining a flat plane sectional image by mutually moving said X-ray generator and said two-dimensional X-ray image sensor held by a rotary arm in a direction opposite to each other, while turning said rotary arm around said object with said interested area interposed therebetween) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. Therefore, these recitations have not been given patentable weight. See MPEP 2114.

10. Regarding claim 11, Arai et al. further discloses a conical X-ray beam (col. 7, lines 18-21).

Also note that recitations (i.e., wherein said second X-ray tomography is executed for obtaining an X-ray computed tomography image of a local region of said object by radiating a conical X-ray beam from said X-ray generator) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. Therefore, these recitations have not been given patentable weight. See MPEP 2114.

11. Regarding claim 14, Arai et al. further discloses wherein said two-dimensional X-ray imaging sensor is comprises of any one of CdTe, MOS, CCD, XII, XICCD (col. 33, lines 35-43), or a photo diode array.

12. Regarding claim 15, Arai et al. would necessarily have wherein start and termination angles of the X-ray circulating radiation are set in such an appropriate position or an angle for a patient to easily come in and out of said object holding means corresponding to said first and second X-ray tomography, respectively (fig. 1).

13. Regarding claim 16, Arai et al. further discloses wherein an X-ray beam switching means is provided for switching a shape of an X-ray beam radiated from said X-ray generator in the first X-ray tomography and a shape of an X-ray beam radiated from said X-ray generator in the second X-ray tomography (col. 4, lines 45-62).

14. Regarding claim 17, Arai et al. further discloses wherein said curved plane X-ray tomography is executed for obtaining a dental panoramic image (fig. 24) or a curved sectional X-ray image for use in otolaryngology.

15. Regarding claim 22, Arai et al. further discloses wherein said object holding means is moveable in an axial direction of the X-ray rotary axis as well as in a vertical direction to the X-ray rotary axis (fig. 2, #10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. as applied to claim 23 above, and further in view of Suzuki et al. (US 2001/0021244).

Arai et al. discloses an apparatus as recited above. Arai et al. further discloses an image processing means (fig. 9, #236) for producing an X-ray sectional image by executing processing to an X-ray transmitted image detected by said two-dimensional X-ray image sensor (fig. 9, #38) in said first X-ray tomography, which is transmitted through said object (fig. 2, object at #163) by radiating X-rays from said X-ray generator (fig. 2, #28).

However, Arai et al. fails to disclose executing Time Delay Integration (TDI) processing.

Suzuki et al. teaches executing TDI processing (paragraphs 26 and 95).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the apparatus of Arai et al. with the TDI processing of Suzuki et al., since one would have been motivated to make such a modification for improving usability of the apparatus (paragraph 95) as shown by Suzuki et al.

17. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. ('842) as applied to claim 23 above, and further in view of Arai et al. (WO 00/57789) and Fujimoto (US 5386446).

18. Regarding claim 8, Arai et al. ('842) discloses an apparatus as recited above.

However, Arai et al. ('842) fails to disclose wherein an object holding means has a chair for holding a patient in a sitting position and a head fixing means at the upper part of the chair, and wherein said object holding means further has a pulse motor for moving said object in an axial direction of an X-ray rotary axis or in a vertical direction to the X-ray rotary axis.

Arai et al. ('789) teaches wherein an object holding means has a chair (page 29, lines 4-10) for holding a patient (fig. 10, R) in a sitting position and a head fixing means (fig. 10, #4a and 4b) at the upper part of the chair, and wherein said object holding means further has a motor (fig. 10, #41) for moving said object in an axial direction of an X-ray rotary axis or in a vertical direction (fig. 10, #41c) to the X-ray rotary axis. Fujimoto et al. teaches a pulse motor (col. 5, lines 18-20).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the apparatus of Arai et al. ('842) with the chair of Arai et al.

('789), since one would have been motivated to make such a modification for making a patient feel more comfortable.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the apparatus of Arai et al. ('842) with the pulse motor of Fujimoto et al., since these motors are art-recognized equivalents for their use in translating objects, and the selection of any of these known equivalents to translate objects would have been within the level of ordinary skill in the art. One would have been motivated to make such a modification for better accuracy and control of movement.

See US 6493415 (col. 20, lines 31-36) for a translation of Arai et al. ('789).

19. Regarding claim 9, Arai et al. ('842) further discloses wherein said X-ray radiation means has a rotary arm (fig. 2, #24) rotatable around the rotary center, said rotary arm holding said X-ray generator (fig. 2, #28) and said two-dimensional X-ray imaging sensor (fig. 2, #38) so as to keep their mutual facing positional relation.

Note that recitations (i.e., wherein said first X-ray tomography is executed for obtaining a curved plane sectional image in a manner such that said rotary arm turns around the object with the center of the orbit of the X-ray circulating radiation fixed during said first X-ray tomography, while said chair is moved along a predetermined imaging orbit in synchronism with the turning of said rotary arm) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. Therefore, these recitations have not been given patentable weight. See MPEP 2114.

Allowable Subject Matter

20. Claims 7, 12, 13, and 18-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome the respective claim objection(s) set forth in the Office action and if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter.

21. Regarding claim 7, the prior art fails to disclose or fairly suggest an X-ray computer tomography apparatus, including a display means on which a first X-ray sectional image of an object taken by a first X-ray tomography is displayed, and an interested area selection means for selecting an interested area to be taken by a second X-ray tomography on said first X-ray sectional image displayed on said display means, and a calculation means of rotary center position for calculating movement data for relatively moving an object holding means or X-ray radiation means in a manner such that an X-ray rotary center conforms to said interested area selected by said interested area selection means, wherein said object holding means or said X-ray radiation means is moved depending on said movement data, and thereafter said X-ray radiation means is circulated with a center of an orbit of X-ray circulating radiation fixedly conformed to said interested area during X-ray circulating radiation, thereby executing said second X-ray tomography, in combination with all of the other limitations in the claim. Claims 12 and 13 contain allowable subject matter by virtue of their dependency.

22. Regarding claim 18, the prior art fails to disclose or fairly suggest an X-ray computer tomography apparatus, including a sectional image link means for subdividing in advance a second X-ray sectional image obtained by a second X-ray tomography into an assembly of X-ray sectional images comprised of plural X-ray sectional images cut out at a fixed interval at least in one direction of three dimensional directions and for linking each X-ray sectional image in said assembly of X-ray sectional images as the second X-ray sectional image to a first X-ray sectional image obtained by a first X-ray tomography corresponding to an imaging region, an image recording means for storing together with each positional information said first X-ray sectional image and said second X-ray sectional image, each linked to the corresponding information, and a corresponding image calling means for invoking the linked corresponding X-ray sectional image when at least one of said first X-ray sectional image and said second X-ray sectional image stored in said image recording means is read out and is shown on said display means, in combination with all of the other limitations in the claim. Claims 19-21 contain allowable subject matter by virtue of their dependency.

Response to Arguments

23. Applicant's arguments filed January 10, 2008, have been fully considered but they are not persuasive.

As seen in the Examiner Interview Summary mailed January 16, 2008, the Examiner stated that claims amendments incorporating a processing means "configured to" control and "configured to" execute would give the corresponding claim recitations patentable weight. However, the claim amendments filed January 10, 2008, do not incorporate such claim language.

Therefore, the corresponding claim recitations do not have patentable weight, and the claims remain rejected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chih-Cheng Glen Kao/
Primary Examiner, Art Unit 2882